STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

Division of Fish and Wildlife
Marine Fisheries

2005
Management Plan for the
Shellfish Fishery Sector

developed in association with the
commercial fishing licensing provisions set forth in the
"Rules and Regulations Governing the Management of Marine Fisheries"

December 13, 2004

AUTHORITY: These regulations are adopted pursuant to Chapters 42-17.1 "DEM", Sections 20-1-4 and 20-2.1-9(5), in accordance with 42-35, of the Rhode Island General Laws of 1956, as amended.

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RULE 1
PURPOSE The purpose of this Management Plan is to comply with the requirement of 6.2 of the "Rules and Regulations Governing the Management of Marine Fisheries". The objective of which is to achieve the optimum yield from each fishery on a continuing basis while maintaining self-sustaining stocks of all marine species, and to restore overfished stocks to sustainable levels.

RULE 2
AUTHORITY These Management Plans are promulgated pursuant to Chapter 42-17.1"DEM", and Section 20-1-4 and 20-2.1-9(5), "An Act Relating to Fish and Wildlife", in accordance with Chapter 42-35, Administrative Procedures, of the Rhode Island General Laws of 1956, as amended.

RULE 3
APPLICATION The terms and provisions of these Management Plans shall be liberally construed to permit the Department to effectuate the purposes of state law, goals, and policies.

RULE 4
REGULATIONS See below

RULE 5
SEVERABILITY
If any provision of these Rules and Regulations, or the application thereof to any person or circumstances, is held invalid by a court of competent jurisdiction, the validity of the remainder of the Rules and Regulations shall not be affected thereby.

RULE 6 SUPERSEDED RULES and REGULATIONS Erlid #2778
On the effective date of this Management Plan, all previous Management Plans of said species resulting from the requirement of 6.2 of the "Rules and Regulations Governing the Management of Marine Fisheries", shall be superseded, provided that Management Plan promulgated by the Director or the RI Marine Fisheries Council will remain in effect until amended or replaced. Provided, furthermore, that any enforcement action taken by, or application submitted to, the Department prior to the effective date of this Management Plan shall be governed by the Management Plan in effect at the time the enforcement action was taken or application was filed

Rule 7. EFFECTIVE DATE

The foregoing rules, after due notice, are hereby adoped and filed with the Secretary of State this 13th day of December, 2004, to become effective 20 days from filing, unless otherwise indicated, in accordance with the provisions.

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Frederick J. Vincent
Interim Director

Notice Given:	9/4/04
Public Hearing:	10/4/04
Filing date:	12/13/04
Effective date:	20 days from filing

Management Plan for the Shellfish Fishery Sector

Bay Quahog Endorsement

Stock Status

The quahog resource in Narragansett Bay is currently fully exploited with biomass below that needed to produce maximum sustainable yield (MSY). A biomass dynamic model is used by the Rhode Island Division of Fish and Wildlife (RIDFW) to assess the overall stock in Narragansett Bay (Gibson 1999). The assessment was updated in 2004 to incorporate new landings and survey data and to adjust nominal license effort to include only active participants. The adjustment, based on RIDFW boat counts and analysis of dealer landing slips, reduced the latent effort bias in the catch per unit effort calculations. The new assessment results indicate that stock biomass in 2003 (18,511 MT) was only about 50% of that needed to support MSY (37,397 MT) (Figure 1). Fishing mortality rates (F) have declined over the past decade and in 2003 was equal to 0.19, near the target 75%F_{msy}= 0.18 and the over fishing definition, F_{msy}= 0.24 (Figure 2).

Recent low biomass follows an extended period of heavy over fishing and was likely exacerbated by an increase in predation on benthic invertebrates. The reduction in F in recent years is related to declining effort because of the low stock levels and landings are currently well below the MSY level for a rebuilt stock (Figure 3). Projections indicate that the stock can increase in biomass at a moderate rate if F remains at current levels.

Although the assessment is conducted on a bay wide basis, resource status may vary spatially within the overall stock area depending on intensity of harvest, proximity to protected spawning beds, and hydrodynamic conditions, which disperse larvae. The distribution of quahogs in the bay is patchy and the fishery selectively exploits patches of higher value product (new recruit necks) as they appear. Because of these factors, the bay wide assessment represents an average condition and not necessarily those at a local level.

Management Program- Quahogs are managed entirely within state waters by the Department of Environmental Management with advice from the Rhode Island Marine Fisheries Council. The Department, through the RIDFW, uses a set of management areas and a rotational transplant/harvest system to manage the resource. Permanent and conditional pollution closures restrict the fishery in addition to seasons, possession limits, and management closures.

A fishery management plan specifies that bay wide fishing mortality rates (F) should be maintained near the target level but below the F_{msy} over fishing definition to allow for biomass rebuilding (Ganz et al. 1999). This requires maintenance of fishing effort near current levels. The rotational harvest and transplant/spawner sanctuary program should be expanded to include more areas. Recent boat counts and analysis of dealer landings slips indicate that about 350 active shell fishers prosecute the quahog fishery. Gibson (1999)

recommended a target fishing mortality rate equal to 75% of the F_{msy} value to preserve an adequate level of spawner biomass in the face of uncertainty. Since current active effort is sufficient to generate F at the target level on a bay wide basis, additional effort will move the fishery toward the over fishing level and reduce the rate of biomass rebuilding. New licenses will essentially compete for a limited yield with current licenses.

Fishery Management Goals and Objectives:

Goal- The following goal is consistent with the objectives of the Rhode Island quahog management plan (Ganz et al. 1999).

> *Rhode Island will have a healthy bay quahog resource and a fishery management regime which provides for sustainable harvest, cooperative management by stakeholders, and appropriate opportunities for fishery participation*.

Objectives-

1. Maintain fishing mortality rates and brood stock abundance at levels that minimize the risk of stock depletion and recruitment failure.
2. Conserve and rebuild quahog resources in Narragansett Bay with appropriate management strategies including transplanting, area closures and spawner sanctuaries.
3. Maintain existing social and cultural characteristics of the fishery wherever possible.
4. Provide for cooperative management with industry and efficient operation, consistent with biological objectives.
5. Provide for adaptive management that is responsive to unanticipated short term events or circumstances.
6. Provide for a simple, uniform and enforceable set of regulations.

Licensing Options and Recommendations:

In 2004, the Department did not issue any new quahog endorsements for the basic commercial fishing license. This decision was based on the Division assessment of quahogs, which indicated that biomass was below MSY and the stock could continue to grow if fishing mortality rates remained static. The Division recommended allowing no more than a 10% increase in effort and because of the uncertainty of whether the issuance of new 65 and over and student shellfish licenses would absorb the 10% increase no endorsements for the basic commercial fishing license were issued.

In 2004 the Department issued 776 principal effort licenses with quahog endorsements compared to 924 in 2003, a difference of 148. Principal effort

license holders with quahog endorsements have access to full harvest levels. In regard to licenses applicable to basic harvest levels, there were an additional 36 licenses in the 65 and over category (50 in 2003; 86 in 2004) and 10 fewer student shellfish licenses (107 in 2003; 97 in 2004).

According to the most recent assessment for quahogs, rates of fishing mortality have been declining since 1999 and are currently below the estimated level that would lead to maximum sustainable yield (F_{msy}). Estimates of biomass are below maximum sustainable yield but have been constant since 1994. Since fishing mortality has declined to below F_{msy} and even though the biomass is below B_{msy}, the fishery could withstand a minimal increase in effort through the issuance of new licenses or quahog endorsements. Theoretically, as long as fishing mortality remains below F_{msy} biomass should increase. Based on this assessment and concerns over an ageing population of licensed quahog fishermen, issuance of new licenses or endorsements should be considered based on a conservative exit/entry ratio such as 3 to 1, as recommended by industry to recruit new participants into the fishery.

Availability of New Licenses in 2005

As specified in regulation, new entry into the quahog fishery will be facilitated initially through the issuance of quahog endorsements to basic commercial license holders. These license holders will be permitted to prosecute the fishery on a limited basis, i.e. half the possession limit allowed to multipurpose and principal effort license holders. Applying the 3:1 ratio to the 148 licenses that were not renewed in 2004 as previously described results in 49 new quahog endorsements that will be available to basic commercial license holders in 2005. These figures are based only on the number of principal effort licenses with quahog endorsements that were not renewed; the figures do not include multipurpose licenses that were not renewed, as they were used to determine the number of restricted finfish endorsements made available. In other words, the number of multipurpose licenses not renewed was only used once, for finfish, to determine availability of new restricted finfish endorsements.

Future Management Considerations-

DEM needs to continue working with industry to ensure a healthy quahog fishery consisting of resource sustainability and a licensing system that will maintain an active group of fishermen and facilitate entry of new participants.

Improvements in the landings data collection system along with RIDFW resource surveys will provide for innovations in management. Acquisition of fishery landings by market class and stratum will allow for stratum specific assessment and management. Fishery selectivity will be directly estimable and biological reference points can be refined to manage size composition in the harvest and

spawning stock. In concert with transplanting and spawner sanctuaries, area specific regulation will be possible.

Non-Quahog Endorsement:

Stock Status- Other species of shellfish commercially harvested include soft-shelled clams, oysters, surf clams, and blue mussels. These species are not routinely assessed by RIDFW. Insufficient data is available to conduct analytical assessments. However, catch per unit effort indices suggest that soft-shelled clams and oysters are at high and medium levels of abundance, respectively (Figure 4). Since abundance seems relatively high for some species and lacking information on mortality rates, there is no basis to impose more restrictive regulations on the other shellfish endorsement. Oyster stock status should be reviewed in the future given the downturn in CPUE.

In August 2003 a substantial anoxic event occurred within Greenwich Bay resulting in the death of many organisms. Four species of fish, three crab species and one species of shellfish (soft-shelled clams) were observed dead from the event. An estimated one billion soft-shelled clams perished, mostly young of the year. The impact on the population is uncertain but caution should be taken in regards to fishing pressure.

Management Program- Steamer clams, oysters, blue mussels, and surf clams are managed in state waters by the Department of Environmental Management with advice from the Rhode Island Marine Fisheries Council. Additional federal regulations apply to surf clams and ocean quahogs in the EEZ. The Department uses seasons and possession limits to manage the state waters fishery. Permanent and conditional pollution closures further restrict the fishery in addition to the above management measures.

Fishery Management and Licensing Recommendations- No changes are recommended to the management program for other shellfish until better data is available on resource status. New commercial licenses should have basic harvest levels equal to current licensees.

Literature Cited

Gibson, M.R. 1999. Assessment of quahogs (*Mercenaria mercenaria*) in Narragansett Bay: technical analyses in support of a bay wide quahog management plan. RI Division of Fish and Wildlife. Res. Ref. Doc. 99/2.

Ganz A.; Lazar N.; Valliere A.(1999). Narragansett Bay Quahog Management Plan. RI Division of Fish and Wildlife. Report to the Narragansett Bay Project and RI Marine Fisheries Council.

Figure 1. Estimated Exploitable Biomass of Quahogs in Narragansett Bay Relative to Biomass at Maximum Sustainable Yield (Bmsy)

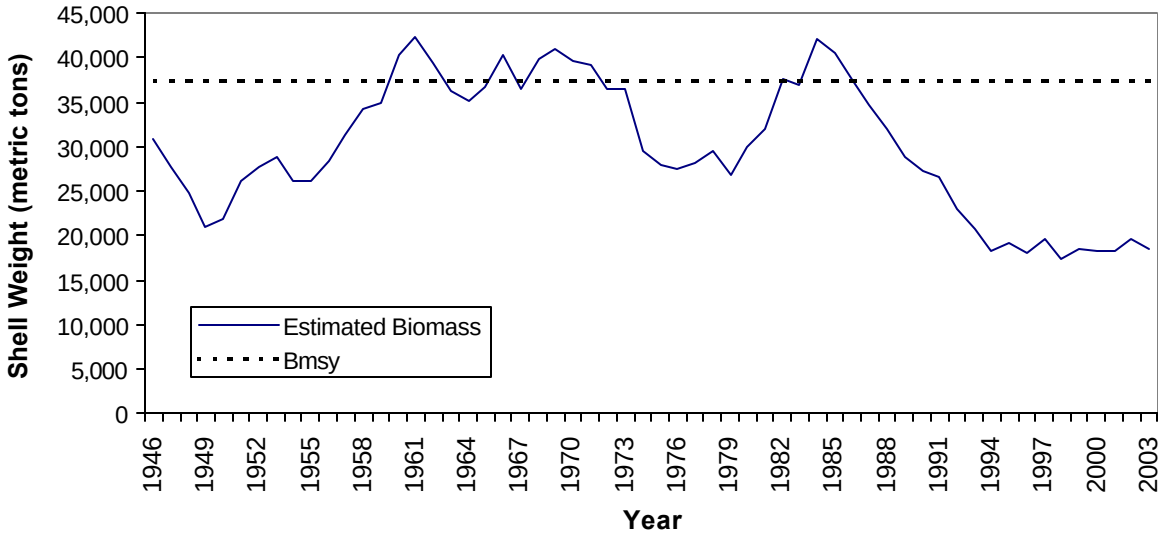

Figure 2. Estimated Rate of Fishing Mortality for Quahogs in Narragansett Bay Relative to Fishing Mortality at Maximum Sustainable Yield (Fmsy)

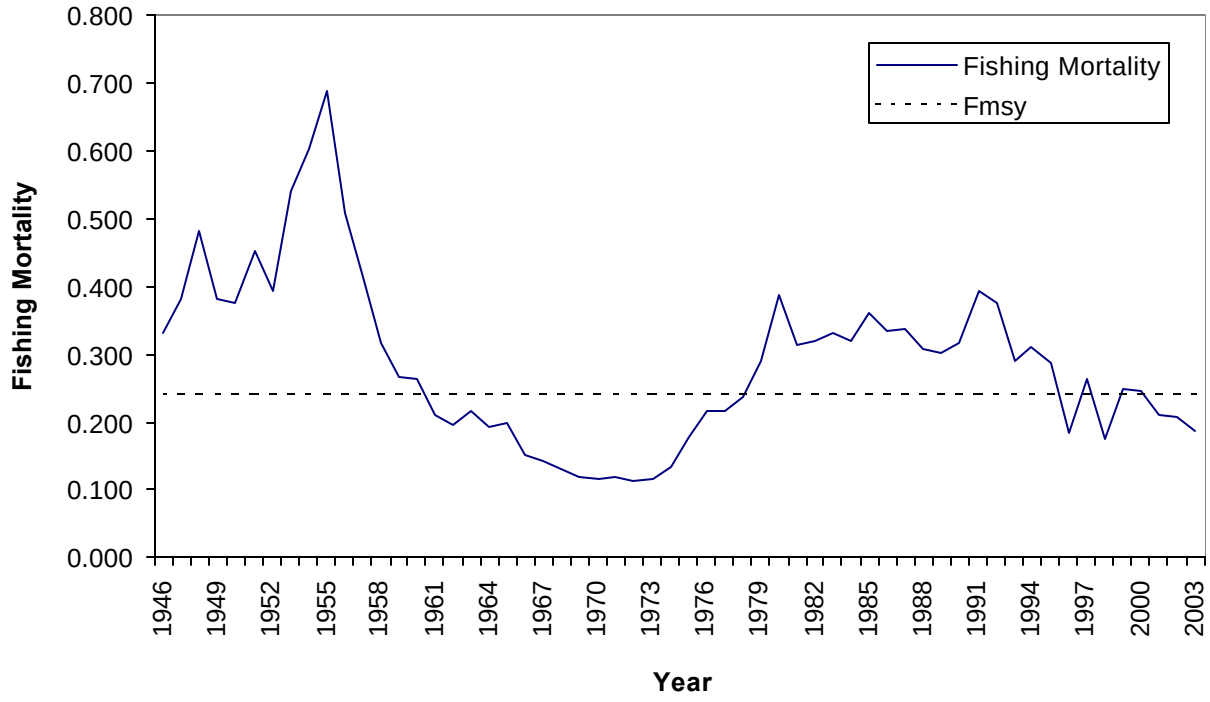

Figure 3. RI Quahog Landings Relative to Maximum Sustainable Yield

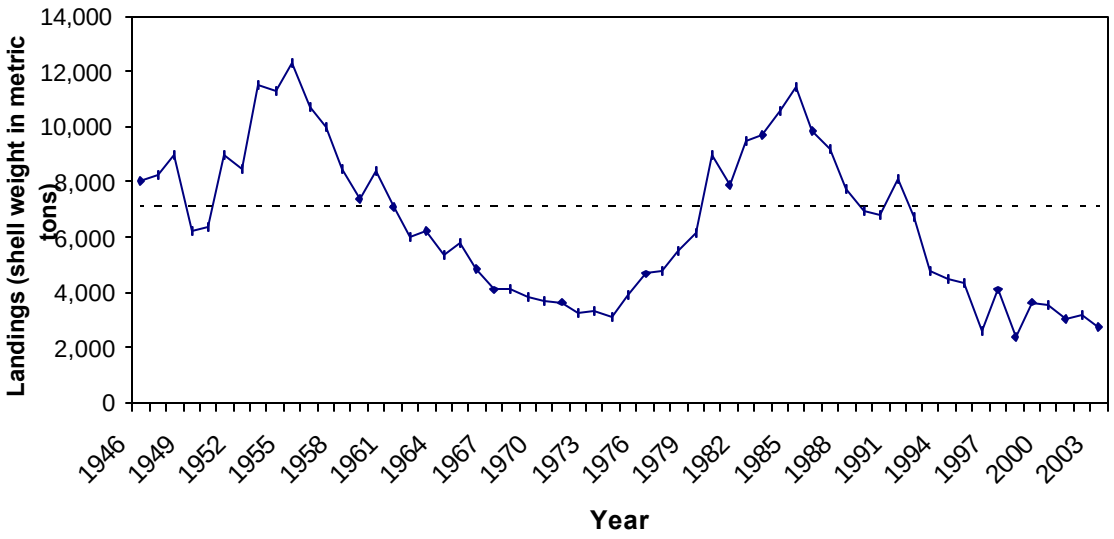

Figure 4. Landings of Soft-Shelled Clams and Oysters per Active License in RI